

ATTACHMENT B
Amendments to the Claims

Please cancel claim 6 without prejudice or disclaimer.

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) An apparatus for continuous tight heat-sealing of the longitudinal overlapping edges of tubular pieces of thermoplastic film, the thickness of which may be limited, produced by unwinding the film from a reel and advancing the film longitudinally through a tubularizing mandrel, said apparatus comprising:

guide means for guiding and for holding the longitudinal edges of the tubularized film so that the longitudinal edges overlap with an intimate and sufficiently distributed contact;

a sealing head, disposed in an opposing position relative to, and a short distance from, the guide means, the sealing head made of a material with good mechanical strength and with a low coefficient of friction in relation to the film to be sealed and with a high degree of thermal insulation, the sealing head adapted to direct at least one continuous jet of air or other gas onto the edges of the film to be sealed, wherein the jet of air or other gas being heated to an appropriate temperature and at an appropriate pressure; and

a fixed generator of hot compressed air controlled by a suitable supply and control means, the generator ~~connect~~ connected to the sealing head via a flexible or jointed means, the ~~generator~~ sealing head being mounted on means of approach and withdrawal, such that, when the film advances, the sealing head is placed a short

distance from the film, in an operation position to seal the ~~firm~~ film, whereas when the film stops, the sealing head is withdrawn from the film,

wherein the sealing head, viewed end-on in the direction of advance of the film to be sealed, is of an essentially rectangular shape, the sealing head has beveled upper long sides, and an upper face of the sealing head has a footprint essentially the same as or slightly different from the effective footprint of the opposing block over which the edges of the film to be sealed slide.

2. (Previously Presented) The apparatus according to claim 1, wherein the guide means comprises a flat fixed opposing block of suitable thickness, over which the edges of the film slide, the opposing block being appropriately rounded at its edges and being made in a suitable engineering polymer.

3. (Currently Amended) The apparatus according to claim 2, further ~~comprising~~, comprises immediately downstream of the opposing block, a second guide means that acts on the opposite face of the overlapping edges of the film from that on which the opposing block acts, thereby providing constant contact between the film and the opposing block, and the second guide means is composed of a suitable engineering polymer.

4. (Previously Presented) The apparatus according to claim 3, wherein the second guide means comprises a roller positioned with its axis of rotation being perpendicular to the direction of advance of the film.

5. (Previously Presented) The apparatus according to claim 1, wherein the sealing head is made in a suitable engineering polymer.

6. (Canceled)

7. (Currently Amended) The apparatus according to claim ~~6~~ 1, further ~~comprising~~ comprises at least one rectangular slit ~~forming which forms~~ an opening on the upper face of the sealing head, the slit having dimensions correlated to the thickness and characteristics of the film to be sealed, the slit being oriented so that its greatest dimension is in the direction of advance of the film, and the slip communicating with a buffer chamber of suitable volume formed inside the sealing head and connected by branched ducts to the flexible or jointed means.

8. (Previously Presented) The apparatus according to claim 7, wherein the at least one rectangular slit comprises two rectangular slits open on the upper face of the sealing head, the two rectangular slits symmetrically arranged to produce on the overlapping edges of the film two continuous longitudinal seals to ensure tightness.

9. (Previously Presented) The apparatus according to claim 7, wherein, in order to seal barrier-effect stretch films with a thickness of about 40 microns, the rectangular slits in the sealing head have a width of about 0.3 mm.

10. (Previously Presented) The apparatus according to claim 9, wherein the rectangular slits in the sealing head are separated by a distance of about 6 mm.
11. (Previously Presented) The apparatus according to claim 7, wherein in order to seal barrier-effect stretch films with a thickness of about 40 microns, the generator of hot compressed air is adapted to generate hot air which passes out through the rectangular slits in the sealing head at a temperature of between 160°C and 180°C, and at a pressure of between 0.1 and 0.8 bar.
12. (Currently Amended) ~~The apparatus according to claim 1, further comprising:~~
An apparatus for continuous tight heat-sealing of the longitudinal overlapping edges of tubular pieces of thermoplastic film, the thickness of which may be limited, produced by unwinding the film from a reel and advancing the film longitudinally through a tubularizing mandrel, said apparatus comprising:
_____ guide means for guiding and for holding the longitudinal edges of the tubularized film so that the longitudinal edges overlap with an intimate and sufficiently distributed contact;
_____ a sealing head, disposed in an opposing position relative to, and a short distance from, the guide means, the sealing head made of a material with good mechanical strength and with a low coefficient of friction in relation to the film to be sealed and with a high degree of thermal insulation, the sealing head adapted to direct at least one continuous jet of air or other gas onto the edges of the film to be sealed, wherein the jet

of air or other gas being heated to an appropriate temperature and at an appropriate pressure; and

a fixed generator of hot compressed air controlled by a suitable supply and control means, the generator connected to the sealing head via a flexible or jointed means, the generator sealing head being mounted on means of approach and withdrawal, such that, when the film advances, the sealing head is placed a short distance from the film, in an operation position to seal the film, whereas when the film stops, the sealing head is withdrawn from the film,

an air inlet with a pressure reducer, through which a source supplying compressed air is ~~connect~~ connected to the generator of hot compressed air; and

an electrical terminal connecting the generator of hot compressed air to an electrical supply interface controlled by a processor which, by means of a heat sensor and a pressure sensor, are adapted to sense operating temperature and pressure, respectively, of the generator, which is connected to a programming and control unit which comprises the control means, the processor having an output terminal, which in the event of an anomaly, sends a ~~single~~ signal to a general computer of the packaging machine that the sealing head needs be rested and emergency measures activated.

13. (Previously Presented) The apparatus according to claim 12, wherein the heat sensor and the pressure sensor of the hot compressed air generator are located at a discharge port and at an inlet port, respectively, of the generator.

14. (Previously Presented) The apparatus according to claim 12, wherein, in normal operating situations, the sealing head works continuously at normal output and, when lowered to move it away from the film because the film is stationary, screening means are activated to deflect the flow of hot compressed air emerging from the head.

15. (Previously Presented) The apparatus according to claim 14, wherein the screening means comprises a horizontal cold or room-temperature compressed-air knife emitted by a short fixed bar, the sealing head moving to a lower level than this bar when in the low or rest position.

16. (Currently Amended) The apparatus according to claim 15, wherein the short fixed bar has a nozzle that emits a jet of cooling air onto the continuous seals produced by the sealing head when in an active position.

17. (Currently Amended) The apparatus according to claim 12, ~~further comprising~~ comprises a deflector device located at a discharge port of the hot compressed air generator, the deflector device, convertible, in phase with ~~the~~ an up or down movement of the sealing head, to switch its state so as to supply hot compressed air to the sealing head or deflect the hot compressed air in other directions, respectively, whereby when the sealing head is raised, the sealing head is fully operational.

18. (Currently Amended) ~~The apparatus according to claim 1~~ An apparatus for continuous tight heat-sealing of the longitudinal overlapping edges of tubular pieces of

thermoplastic film, the thickness of which may be limited, produced by unwinding the film from a reel and advancing the film longitudinally through a tubularizing mandrel, said apparatus comprising:

_____ guide means for guiding and for holding the longitudinal edges of the tubularized film so that the longitudinal edges overlap with an intimate and sufficiently distributed contact;

_____ a sealing head, disposed in an opposing position relative to, and a short distance from, the guide means, the sealing head made of a material with good mechanical strength and with a low coefficient of friction in relation to the film to be sealed and with a high degree of thermal insulation, the sealing head adapted to direct at least one continuous jet of air or other gas onto the edges of the film to be sealed, wherein the jet of air or other gas being heated to an appropriate temperature and at an appropriate pressure; and

_____ a fixed generator of hot compressed air controlled by a suitable supply and control means, the generator connected to the sealing head via a flexible or jointed means, the sealing head being mounted on means of approach and withdrawal, such that, when the film advances, the sealing head is placed a short distance from the film, in an operation position to seal the film, whereas when the film stops, the sealing head is withdrawn from the film,

_____ wherein the sealing head is attached to a moving part of a rectilinear actuator mounted on a slide that moves on guide means parallel to the movement of the actuator, the slide being pushed in one direction by elastic means and being movable in the opposite direction by means of an adjusting screw, all in such a way that it is

possible to adjust the distance of the sealing head from the film to be sealed when in an active sealing position.

19. (Previously Presented) The apparatus according to claim 18, wherein the actuator is a double-acting fluid-pressure cylinder with a non-rotating rod.

20. (Previously Presented) The apparatus according to claim 18, wherein the rectilinear actuator is of a type controlled by a motor with electronic control of speed and phase, so that the sealing head can be moved towards and away from the film with appropriate decelerations and accelerations correlated to the starting and stopping of the film.

21. (Currently Amended) ~~The apparatus according to claim 1~~ An apparatus for continuous tight heat-sealing of the longitudinal overlapping edges of tubular pieces of thermoplastic film, the thickness of which may be limited, produced by unwinding the film from a reel and advancing the film longitudinally through a tubularizing mandrel, said apparatus comprising:

_____ guide means for guiding and for holding the longitudinal edges of the tubularized film so that the longitudinal edges overlap with an intimate and sufficiently distributed contact, the guide means comprising an opposing block fixed to an outer face of a bottom wall of the fixed tubular guide, the opposing block having a surface on which the longitudinal edges of the thermoplastic film to be sealed are pressed and guided, and the guiding means further comprises a guide roller mounted by a spindle to lower

flanges of the horizontal film-tubularizing mandrel, the tubularizing mandrel having a large slot through which the opposing block passes and through which overlapping edges of the film are visible and can be prepared by the sealing head;

a sealing head, disposed in an opposing position relative to, and a short distance from, the guide means, the sealing head made of a material with good mechanical strength and with a low coefficient of friction in relation to the film to be sealed and with a high degree of thermal insulation, the sealing head adapted to direct at least one continuous jet of air or other gas onto the edges of the film to be sealed, wherein the jet of air or other gas being heated to an appropriate temperature and at an appropriate pressure;

a fixed generator of hot compressed air controlled by a suitable supply and control means, the generator connected to the sealing head via a flexible or jointed means, the sealing head being mounted on means of approach and withdrawal, such that, when the film advances, the sealing head is placed a short distance from the film, in an operation position to seal the film, whereas when the film stops, the sealing head is withdrawn from the film, further comprising: the means of approach and withdrawal comprising a lifting and lowering actuator controlled by a main computer in such a way that the sealing head is:

- (a) up while the film is advancing,
- (b) down when the film is stopped, and
- (c) temporarily raised during a phase of longitudinal stretching of each packaging, before the back of the packaging is closed;

a horizontal film-tubularizing mandrel, for longitudinal edges of thermoplastic film to be overlapped underneath the horizontal film-tubularizing mandrel to be sealed tightly by the sealing head;

a fixed tubular guide passing longitudinally through the horizontal film-tubularizing mandrel in order to insert product to be packaged in the thermoplastic film;

means for the controlled supply of the thermoplastic film disposed upstream of the horizontal film-tubularizing mandrel; and

gripping pincers, disposed downstream of the horizontal film-tubularizing mandrel, for double sealing and intermediate cutting, the gripping pincers alternate upstream and downstream of tubular packaging with product inside, to form a packaging with a prior longitudinal stretching operating;

—— wherein:

—— ~~the guide means comprises an opposing block fixed to an outer face of a bottom wall of the fixed tubular guide, the opposing block having a surface on which the longitudinal edges of the thermoplastic film to be sealed are pressed and guided, and the guiding means further comprises a guide roller mounted by a spindle to lower flanges of the horizontal film tubularizing mandrel, the tubularizing mandrel having a large slot through which the opposing block passes and through which overlapping edges of the film are visible and can be prepared by the sealing head; and~~

—— ~~the means of approach and withdrawal comprises a lifting and lowering actuator controlled by a main computer in such a way that the sealing head is:~~

—— ~~(a) up while the film is advancing,~~

—— ~~(b) down when the film is stopped, and~~

_____ (c) temporarily raised during a phase of longitudinal stretching of each
packaging, before the back of the packaging is closed.